Exploring Michigan's Freshwater Fisheries Elective
Saginaw Bay Visitor Center
Bay City State Recreation Area **Level: 4th, 5th or 6th Grade**

(Lessons Learned From the Bald Eagle Fieldtrip Elective)

FIELD TRIP PROGRAM DESCRIPTION:
Fishing for Fun Elective (4-5 hours):

Students participate in a 6 station, 2.5 hour fishing clinic in the morning and then put into practice the fishing science in the afternoon. Stations are set up to familiarize students with the Pathways to Fishing Formula for Successful Fishing: F + L + P = S. If you know your fish (Fish) and you know the habitat of your fish (+ Location) and you know how to select the right equipment and bait and how to get the bait out to the fish (+ Presentation) you will have success (= Success) in fishing!

Arrival (15 minutes): Arrive at park and divide students into groups to go through instructions.
Station 1 (30 minutes): Learn about fish biology & food chains, habitat requirements, where you go to get more information about your fish, fish anatomy/traits and how to identify your fish.
Station 2 (30 minutes): Fish classification & identification by family and species utilizing anatomy, traits, special adaptations.
Station 3 (30 minutes): Alien Spotters - Invasive species are the greatest threat to our freshwater fisheries, students will learn what an invasive species is, how to identify them and how to report them when spotted
Station 4 (30 minutes): Weather, Safety & Casting deals with basic safety precautions every angler should take, casting tips, and hands-on casting practice.
Station 5 (30 minutes): How to put on a bobber, how to detect a bite, set the hook and land a fish, and how to get a fish off the hook. Demonstration of 5 fish holds; fishing code of ethics, fishing rules and regulations, and fishing clinic conclusion.
Lunch (30 minutes): Students will have time to eat lunch at the park (not provided).
Fishing Dock (45-90 minutes): Provide the students with fishing poles and bait to go fishing in the Tobico Lagoon. During the outdoor fishing experience students will rotate through the visitor center museum and review the Lesson Learned From the Bald Eagle. Review of the Fish Consumption Advisory will also take place utilizing the computer touch screen "virtual fishing trip".

PROGRAM GOALS:

1. Each student will participate in a 5-station fishing clinic, where they learn the fundamentals of fishing and go fishing.
2. Each student will gain knowledge about the role man has played in altering the freshwater ecosystem of the Saginaw Bay and its impact on future use of the resource.

PROGRAM OBJECTIVES:

1. Students will be able to list and describe the four components which make up a fish's habitat: Food, Water, Shelter and Space.
2. Students will be able to identify factors in the Great Lakes aquatic ecosystem that influence changes in fish and bird populations.
3. Each student will be able to classify what family a fish belongs to using the fish's unique traits and anatomical features.

4. Students will be able to describe different members of a Great Lake food chain/food web and their place in it.
5. Students will be able to identify the gills of fish as a part of the respiratory and circulatory systems, the tongue and its function in the digestive system, the anal opening as part of the excretory and reproductive systems, and the lateral line and nares as part of the nervous system.
6. Students will be able to identify and report 4 aquatic invasive species threatening our fisheries
7. Students will be able to tie one fishing knot.
8. Students will be able to explain at least one way anglers can prevent the spread of invasive species
9. Students will be able to list at least two safety precautions to take when going on a fishing trip.
10. Students will be able to demonstrate at least two ways to hold a fish while taking it off the hook.
11. Students will be able to list two ways they can be an ethical angler.

PREPARING YOUR STUDENTS FOR THE FIELD TRIP:

1. Call the visitor center to schedule a field trip (choosing one of the three field trip electives.)
2. Talk with the students about what they should wear for their fishing trip: hat and sunglasses (to protect the head and eyes from fish hooks and the sun), sunscreen, shoes that can get muddy/wet, rain gear and wind gear.
3. Please emphasize safety around water and fish hooks. Fishing equipment and water can become dangerous when rules are not observed.

4. Invite responsible adults who can be "fishing mentors" for the students during the actual fishing experience. Ideally, we would like to have 1 adult/5 students.

POST-VISIT SUGESTIONS:

1. Do one of the lessons in the MSU Extension Fishing for Fun workbook, provided for teachers in the post-visit teacher packet.
2. Have the students design their own fish, name it and describe its food, water, shelter and space requirements.
3. Visit a DNR Fish Hatchery.
4. Participate in the all new DNR classroom program "Salmon in the Classroom"
5. Participate as a class in the BAY SAIL program. Information on BAY SAIL is available from the Bay Area Visitors and Convention Bureau.
6. Contact EPA, Mary Breeden, 804 S. Hamilton St., Suite 3, Saginaw, MI 48602 (989) 401-5509

COORDINATING WITH MICHIGAN SCIENCE Grade Level Content Expectations:

Bold & Underlined=prominent program emphasis, Bold=reinforced through program, Italicized=program can be used to reinforce back in classroom

Science. Inquiry Process:

S.IP.04.11, **S.IP.04.12**, *S.IP.04.13*, **S.IP. 04.14**, **S.IP.04.15**,
S.IP.05.11, **S.IP.05.13, S.IP.05.14**, **S.IP.06.11**, *S.IP.06.12*, **S.IP.06.13**, **S.IP.06.14,** *S.IP.06.15, S.IP.06.16*

Science. Inquiry Analysis & Communications:

S.IA.04.11, **S.IA.04.12**, *S.IA.04.13*,
S.IA.05.11, **S.IA.05.12**, *S.IA.05.13*, *S.IA.05.15*,
S.IA.06.11. **S.IA.06.12**, *S.IA.06.13*, *S.IA.06.15*

Science. Reflection & Social Implications

S.RS.04.11, *S.RS.04.15*, *S.RS.04.16*, *S.RS.04.17*. **S.RS.04.18**,
S.RS.05.12, **S.RS.05.13**, **S.RS.05.15**, *S.RS.05.16*, **S.RS.05.17**, *S.RS.05.19,*

S.RS.06.13, **S.RS.06.14**, **S.RS.06.15**, *S.RS.06.16*, **S.RS.06.17**, *S.RS.06.18*

Life Science. Organization of Living Things:

L.OL.04.15, L.OL.04.16

L.OL.05.41, L.OL.06.52

Life Science. Evolution:

L.EV.04.22,

L.EV.05.11, **L.EV.05.12**, *L.EV.05.14*, **L.EV.05.21**

Life Science. Ecosystems:

L.EC.04.11, L.EC.04.21,

L.EC.6.11, L.EC.06.21, *L.EC.06.22*, **L.EC.06.23, L.EC.06.31**, **L. EC.06.32, L.EC.06.41, L.EC.06.42**

Life Science. Heredity: *L.HE.05.11*, *L.HE.05.12*

COORDINATING WITH M.E.A.P. SOCIAL STUDIES CONTENT STANDARD BENCHMARKS:

Geographic Perspectives	**Civic Perspective**
II.1 --- I,e,2	III.4 --- I.e.1
II.2 --- I.e.1, I.e.2, I.e.4	
II.4 --- I.e.5	
II.5 --- I.e.	

Correlating with the Common Core NGSS Standards

MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. [Clarification Statement: Emphasis is on how these resources are limited and typically non-renewable, and how their distributions are significantly changing as a result of removal by humans. Examples of uneven distributions of resources as a result of past processes include but are not limited to petroleum (locations of the burial of organic marine sediments and subsequent geologic traps), metal ores (locations of past volcanic and hydrothermal activity associated with subduction zones), and soil (locations of active weathering and/or deposition of rock).]

MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. [Clarification Statement: Emphasis is on how some natural hazards, such as volcanic eruptions and severe weather, are preceded by phenomena that allow for reliable predictions, but others, such as earthquakes, occur suddenly and with no notice, and thus are not yet predictable. Examples of natural hazards can be taken from interior processes (such as earthquakes and volcanic eruptions), surface processes (such as mass wasting and tsunamis), or severe weather events (such as hurricanes, tornadoes, and floods). Examples of data can include the locations, magnitudes, and frequencies of the natural hazards. Examples of technologies can be global (such as satellite systems to monitor hurricanes or forest fires) or local (such as building basements in tornado-prone regions or reservoirs to mitigate droughts).]

MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*[Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]

MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. [Clarification Statement: Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.]

MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. [Clarification Statement: Examples of factors include human activities (such as fossil fuel combustion, cement production, and agricultural activity) and natural processes (such as changes in incoming solar radiation or volcanic activity). Examples of evidence can include tables, graphs, and maps of global and regional temperatures, atmospheric levels of gases such as carbon dioxide and methane, and the rates of human activities. Emphasis is on the major role that human activities play in causing the rise in global temperatures.]